

Population Estimates Used in NCI's SEER*Stat Software

The county population estimates implemented in the NCI SEER*Stat software for the calculation of cancer incidence and mortality rates are available from our web site (<http://seer.cancer.gov/popdata>). They represent a modification of the annual time series of July 1 county population estimates by age, sex, race and Hispanic origin produced by the Population Estimates Program of the Bureau of the Census with support from the NCI through an interagency agreement. The Census Bureau population estimates are available from their website (<http://www.census.gov/population/www/estimates/countypop.html>). The procedures implemented by the Census Bureau in producing their county estimates are also documented on their web site (http://www.census.gov/population/estimates/county/casrh_doc.txt).

The initial modification that the NCI has made to the Census Bureau estimates affects only population estimates for the state of Hawaii. The Epidemiology Program of the Hawaii Cancer Research Center has developed their own set of population estimates, based on sample survey data collected by the Hawaii Department of Health. This effort grew out of a concern that the native Hawaiian population has been vastly undercounted in previous censuses. The "Hawaii-adjustment" to the Bureau of Census estimates has the net result of reducing the estimated White population and increasing the Asian and Pacific Islander population for the state. The Bureau of Census estimates for the total population, Black population, and American Indian and Alaska Native populations in Hawaii are unaffected.

An additional modification to the Census Bureau estimates was recently implemented in order to meet requirements for age-adjustment according to the year 2000 U.S. population standard. The following describes how population estimates for two new age groups (less than one year-olds and one to four year-olds) were created for the 1969-89 estimates and for the 1990-99 estimates.

1969-1989 NCI SEER*Stat Population Estimates

The 1969-1989 population estimates were taken from the NCI standard 200 format files (i.e., the same population estimates which have been available through SEER*Stat). These population estimates were already modified according to the Hawaii survey data. Single year of age population estimates were obtained from a private vendor (Woods and Poole Economics, Inc., 2001 Regional Database, Copyright January 2001; estimated July 1 population by race, sex and single year of age based on 1990 Census and post-censal Census Bureau estimates). The following steps were followed to create the two new age groups for the SEER*Stat population estimates:

1. The Woods & Poole single year of age populations for zero to four year olds were used by year (1970-1989), state/county, race (White, Black, Other) and sex (male, female). To be consistent with the county codes used by the NCI (Appendix 1), various counties available in the Woods & Poole data needed to be combined or recoded (Appendix 2). There were also several counties, mainly in Virginia but are not combined in the NCI data that are combined in the Woods & Poole data. For these NCI counties, the combined county Woods & Poole data was used for each of the individual NCI counties (Appendix 3).
2. The Black and "Other" race populations from the Woods & Poole data were summed to create populations for Non-White. At this point, the "Other" race was dropped leaving the races White, Black and Non-White.
3. The proportion of less than one year-olds in the zero to four year-old age group was calculated by year, state/county, race (White, Black, Non-White) and sex from the Woods & Poole data.
4. Using the current 1969-1989 population NCI estimates, the proportions from the Woods & Poole data were applied to the zero to four year-old age group by year, state/county, race (White, Black, Non-White) and sex. The proportions for 1970 were used for 1969. Populations for the one to four year-old age groups were calculated by subtracting the new less than one year-old populations from the zero to four year-old populations.

5. The Black and Non-White populations were compared for the two new age groups (<1, 1-4). Due to rounding, there were instances where the Black population for an age group was higher than the Non-White population. For these, the Non-White population was increased to match the Black population. Most of these cases needed only an increase of one. The highest increase was 3.
6. Populations for the two new age groups (<1, 1-4) were merged with the 1969-1989 population data. The zero to four year-old age group was dropped.

1990-1999 NCI SEER*Stat Population Estimates

The 1990-1999 single year of age populations were obtained by NCI from the Census Bureau through an interagency agreement. This file contains populations by year, state/county, race/ethnicity, sex and age. The race groups included in the Census estimates are White, Black, American Indian/Eskimo/Aleut and Asian/Pacific Islander. Population records were created for 19 age groups (<1, 1-4, 5-9, ..., 85+) for White (total), Hispanic White, Non-Hispanic White, Non-White (total), Hispanic Non-White, Non-Hispanic Non-White, Black, American Indian/Eskimo/Aleut and Asian/Pacific Islander. The following steps were taken to create the 1990-1999 population records:

1. The single year of age populations were summed into the 19 age groups by year, state/county, race/ethnicity and sex. One record was created by year, state/county, race/ethnicity and sex with 19 variables containing the age populations. The following racial/ethnic groups were created: Total, Non-Hispanic White, Hispanic White, Black, American Indian/Eskimo/Aleut, Asian/Pacific Islander and Total Hispanic.
2. Census Federal Information Processing Standards (FIPS) county codes were collapsed to match the county list that is used by the NCI (Appendix 1).
3. Adjustments to the Hawaii populations from the Census Bureau were made in collaboration with investigators at the Hawaii Cancer registry using population data provided by the Hawaii registry. The proportion of the White (total) population to the total (all racial/ethnic groups combined) population was calculated from the Hawaii registry populations for 1990-1993 by year, sex, and age group. Because the Hawaii estimates only extend through 1993, the 1993 proportion was used for 1993 and later years. The proportion was applied to the total (all racial/ethnic groups combined) population estimate from the Census Bureau to produce the Hawaii-adjusted White (total) population. Additional racial/ethnic populations for Hawaii were developed in the following manner:
 - Non-Hispanic White = Hawaii adjusted White – Census Hispanic White
 - Asian/Pacific Islander = Census Total – (Hawaii adjusted White + Census Black + Census American Indian/Eskimo/Aleut
 - Hispanic Non-White = Census Hispanic Total – Census Hispanic White
 - Non-Hispanic Non-White = Census Total – (Hawaii adjusted White (total) + Hispanic Non-White)
4. The adjusted Hawaii data were merged with the other county level data.

Appendix 1. Listing of counties combined/recoded in the 1969-99 NCI population data.

Combined Counties

State	Years	NCI County	FIPS County Code
Alaska	All	900	All Counties
Arizona	1990-93	910	012 La Paz County 027 Yuma County
Hawaii	All	900	All Counties
New Mexico	1969-81	910	006 Cibola County 061 Valencia County
New York	1969-79	910	005 Bronx County 047 Kings County 061 New York County 081 Queens County 085 Richmond County
Virginia	All	910	153 Prince William County 683 Manassas City 685 Manassas Park City
	All	911	095 James City County 199 York County 735 Poquoson City 830 Williamsburg City
	All	913	089 Henry County 690 Martinsville City
	All	914	165 Rockingham County 660 Harrisonburg City
	All	915	177 Spotsylvania County 179 Stafford County 630 Fredericksburg City
	All	916	005 Alleghany County 580 Covington City
	All	917	019 Bedford County 515 Bedford City
	All	918	013 Arlington County 059 Fairfax County 510 Alexandria City 600 Fairfax City 610 Falls Church City
	All	919	083 Halifax County 780 South Boston City

Recoded Counties

State	Years	NCI County	FIPS County Code
Florida	1990-99	025	086 Miami Dade County
Missouri	All	193	186 St Genevieve County
Virginia	All	912	800 Suffolk City

Appendix 2. Listing of Woods & Poole counties combined/recoded to match NCI county codes

Combined Counties

State	Woods & Poole	NCI County Code
New York	5+47+61+81+85 (1970-79 Only)	910 Bronx County + Kings County + New York County + Queens County + Richmond County
Virginia	931+958	911 James City County + York County + Poquoson City + Williamsburg City
	179+951	915 Spotsylvania County + Stafford County + Fredericksburg City
	919+13+510	918 Alington County + Fairfax County + Alexandria City + Fairfax City + Falls Church City

Recoded Counties

State	Woods & Poole	NCI County Code
Alaska	000	900 All counties
Arizona	027	910 La Paz County + Yuma County
Florida	086	025 Miami Dade County
Missouri	186	193 St Genevieve County
Virginia	942	910 Prince William County + Manassas City + Manassas Park City
	800	912 Suffolk City
	929	913 Henry County + Martinsville City
	947	914 Rockingham County + Harrisonburg City
	909	917 Bedford County + Bedford City
	083	919 Halifax County + South Boston City

Appendix 3. Listing of counties that are collapsed in the Woods & Poole population data.

The data for these combined counties were output once for each of the individual NCI county codes.

State	Woods & Poole	NCI County Code
New Mexico	061	006 Cibola County 061 Valencia County
Virginia	901	003 Albemarle County 540 Charlottesville City
	903	560 Clifton Forge City 916 Alleghany County + Covington City
	907	015 Augusta County 790 Staunton City 820 Waynesboro City
	911	031 Campbell County 680 Lynchburg City
	913	035 Carroll County 640 Galax City
	918	053 Dinwiddie County 570 Colonial Heights City 730 Petersburg City
	921	069 Frederick County 840 Winchester City
	923	081 Greensville County 595 Emporia City
	933	121 Montgomery County 750 Radford City
	939	143 Pittsylvania County 590 Danville City
	941	149 Prince George County 670 Hopewell City
	944	161 Roanoke County 775 Salem City
	945	163 Rockbridge County 530 Buena Vista City 678 Lexington City
	949	175 Southampton County 620 Franklin City
	953	191 Washington County 520 Bristol City
	955	195 Wise County 720 Norton City
	958	199 York County 735 Poquoson City
Wisconsin	901	078 Menominee County 115 Shawano County